

Yet further it will be appreciated that, although a transmission hologram is probably the most convenient way of imparting diffractive power to an artificial eye lens, it could be imparted in other ways such as forming a zone plate in analogous fashion to a diffraction grating.

I claim:

1. An artificial eye lens having basic refractive power providing one focus, and having diffractive power which deviates some light from the basic refractive power focus to another focus.
2. An artificial eye lens according to claim 1 in which the diffractive power is provided by a transmission hologram.
3. An artificial eye lens according to claim 1 or claim 2 having diffractive power over a particular wavelength band or bands so as to have a selective focussing action on light within that wavelength band or bands.
4. An artificial eye lens according to claim 1 or claim 2 having diffractive power of less than 100% efficiency such that a proportion of incident light of a relevant wavelength is diffracted while the remainder of the incident light of that wavelength is undeviated by diffraction.
5. An artificial eye lens according to claim 4 having some diffractive power over all or substantially all of the visible spectrum.
6. An artificial eye lens according to claim 5 having different efficiencies of diffractive power over different parts of the visible spectrum.
7. An artificial eye lens having a bi-focal action through basic power provided by the shape, curvature and material of the lens, and a different power provided through diffractive power.
8. An artificial eye lens according to claim 7 in which the basic power is for far vision and the diffractive power is additive to the basic power to provide a greater power for near vision.
9. An artificial eye lens according to claim 2 in which the hologram is provided over the full visually used area of the lens.
10. An artificial eye lens according to claim 2 in which the hologram is formed in a layer of the lens.

11. An artificial eye lens according to claim 10 in the form of a contact lens in which the hologram is formed in a surface layer of the lens.

12. An artificial eye lens according to claim 10 in the form of an implant lens in which the hologram is formed in a layer located within the lens.

13. An artificial eye lens according to claim 2 in which the hologram is formed in the bulk material of the lens.

14. An artificial eye lens according to claim 2 in which the hologram is optically generated by use of active and reference light beams.

15. An artificial eye lens according to claim 2 in which the hologram is a surface relief hologram.

16. An artificial eye lens according to claim 15 in which the hologram is mechanically generated during moulding of the lens.

17. An artificial eye lens according to claim 1 or claim 2 in which the bulk material of the lens is tinted.

18. An artificial eye lens according to claim 1 or claim 2 in the form of a contact lens.

19. An artificial eye lens according to claim 1 or claim 2 in the form of an implant lens.

20. An artificial eye lens according to claim 2 in which the hologram is formed on the bulk material of the lens.

21. An artificial eye lens which is basically powerless, the lens having a transmission hologram which gives it diffractive power.

22. An artificial eye lens according to claim 1 further defined in dividing light passing through a common portion thereof and providing said two foci for said light, a first portion of said light being focused by refraction and a second portion of said light being focused by diffraction.

23. An artificial eye lens according to claim 22 having an optical axis wherein said common portion is located on said axis.

24. An artificial eye lens dividing light passing through a common portion thereof and providing at least two foci for said light, each portion of said light being focused by diffraction.

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